The Harveian oration, delivered before the Royal College of Physicians, Wednesday, June 27th, 1877 / by Edward H. Sieveking.

THE

HARVEIAN ORATION,

DELIVERED BEFORE

THE ROYAL COLLEGE OF PHYSICIANS,

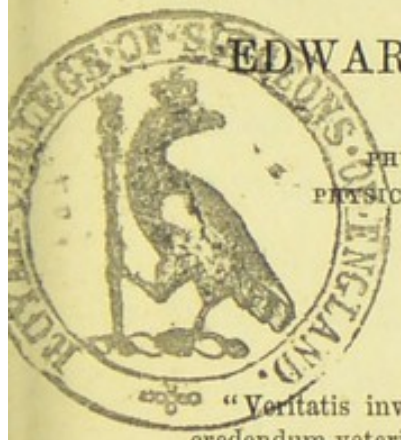
WEDNESDAY, JUNE 27th,

1877.

BY

EDWARD H. SIEVEKING, M.D., F.R.C.P.

PHYSICIAN-EXTRAORDINARY TO THE QUEEN;
PHYSICIAN-IN-ORDINARY TO THE PRINCE OF WALES;
PHYSICIAN TO ST. MARY'S AND THE LOCK HOSPITALS, ETC.



"Veritatis invicta vis est. Adrasteæ legem nemo potest facile effugere. Isi credendum veteribus et Galeno nostro, qui ipse suo exemplo hoc demonstravit. Sicut vero in multis aliis hoc patuit, ita nescio an unquam clarius quam in novâ doctrinâ de motu sanguinis."—PAULI MARQUARTI SLEGELII, *De Motu Sanguinis Commentatio.* Hamburgi: 1650.

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THE

HARVEIAN ORATION,

1877.

MR. PRESIDENT AND FELLOWS OF THE ROYAL COLLEGE OF PHYSICIANS, GENTLEMEN,—

The fog that prevailed in the realms of science before the publication of Harvey's great work, compared to the ever-brightening light that has been shed over them since he taught the doctrine that has been all but universally associated with his name since 1628, necessarily renders us, as it did his contemporaries of this ancient College, anxious to see that his fame suffers no diminution through our neglect.

It might seem impossible for any one who has carefully studied the literature of the subject, to entertain a doubt as to Harvey's claim to be regarded as the regenerator of human and animal physiology. The feeble opposition of the ungenerous Riolan,* who taught a modified Galenic doctrine of the functions of the heart and vessels,

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* "Les mauvais raisonnements de Riolan."—Flourens, *Histoire de la Circulation*, p. 37.

was triumphantly met by the clear and practical exposition of Professor Schlegel of Hamburg. Other men, no less distinguished in their age and country, appeared to establish Harvey as the real founder of the doctrine of the circulation, to which we ascribe the origin of modern scientific medicine. Professor Walæus* in Leyden in 1640, Joannes Trullius† in Rome in 1651, supported the new doctrine. Plempius in Louvain, in 1652, voluntarily and publicly professed himself an adherent of Harvey. Previously to the appearance of Schlegel's admirable work in 1650, his friend and compatriot Werner Rolfink,‡ reputed one of the best German anatomists of the time, had in 1630 given his adhesion to Harvey's views. Nor is it without significance that Descartes,§ in his *Discours de la Méthode pour bien conduire sa Raison et chercher la Vérité dans les Sciences*, in 1637, spoke of the English physician as the man to whom the world owed the knowledge of a continuous circulation of the blood. Although here

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* Born in 1604 at Koudekerke, in Zeeland ; died in 1649.

† See *Versuch einer pragmatischen Geschichte der Arzneikunde*, von Kurt Sprengel. Halle, 1800-1803, 5 vols. 8vo, vol. iv. p. 43. This book may be generally consulted with advantage on all questions connected with the history of medicine, from the earliest times to the end of the eighteenth century.

‡ Werner Rolfink was born at Hamburg in 1599, and, like Schlegel, filled the post of Professor of Medicine, Botany, Anatomy, and Chemistry at Jena. His chief work was entitled *Dissert. Anat.*, lib. vi. (see lib. v. c. 12, p. 845, and lib. vi. c. 14, p. 1089). He died in 1677.

§ *Discours de la Méthode par Descartes, avec une notice biographique*, par Ad. Hatzfeldt. Paris, 1872, p. 71, *et seqq.*

and there writers, jealous of Harvey's fame, brought forward Servetus, Sarpa, Cæsalpinus, and others still less worthy of being named, as possessing prior claims to the position assigned to Harvey, the great body of scientific men of that and all future days have subscribed to the opinion that we owe the modern doctrine of the circulation of the blood and of the moving power of the heart to him.

After the many disquisitions on the priority of Harvey's claims that have been offered to the Fellows of this College, from the oration of Friend to that of the exhaustive address by the learned Linacre Professor, Dr. Rolleston, four years ago, it would scarcely have been befitting in me to bring up this *crambe iterum repetita* on the present occasion, had not a recent event appeared to make it a matter of duty to inquire again into the claims of one of the three names just mentioned.

English physicians were startled last year* by the announcement that on October 30th a monument of Andrea Cesalpino was unveiled at Rome, on the ground of his being the first discoverer of the circulation of the blood. Dr. Giulio Ceradini, Professor of Physiology at Genoa, appears to have been the chief orator on the occasion, and to have asserted, after stating that Cesalpino pro-

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* *Lancet*, November 4th, 1876.

duced experimental proof of the circulation in 1593, that Harvey could in 1628 adduce nothing more than a fresh proof of the circulation in the venous valves, discovered by Fabricius ab Aquapendente as early as 1574, by demonstrating that the said valves must oppose the centrifugal movement of the blood in the veins. Ceradini maintained that Harvey's merit really consists in having sustained and won a battle against ignorance and prejudice by divulging the discovery of Cesalpino.

Although the claims of Andrea Cesalpino of Arezzo have been put forward and amply discussed —by none, perhaps, more fully and justly than by Dr. Willis in his admirable *Life of Harvey**— it has appeared to be, under the circumstances, a duty of the Harveian orator of the present year to search the original works of Cesalpino, and to ascertain whether contemporary and later history have erred in awarding to our countryman the palm which really belongs to a greater predecessor of his. One thing appears indisputable: that, whatever Cesalpino has written, his views on the circulation were not considered of much consequence, and certainly not subversive of the old Galenic doctrines, at the time that Harvey resided in Padua, and subsequently Schlegel in Venice

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* Prefixed to the Sydenham Society's edition of the *Works of William Harvey*, 1847, p. 60.

and other parts of Italy. The former, whom his greatest detractors* have never accused of want of uprightness and honesty, does not allude to the discoveries of Cesalpino ; and the latter† distinctly says that, having been in familiar intercourse with the most distinguished anatomists in Padua, Venice, and throughout Italy, for some years, he had found "the movement of the blood almost entirely unknown, or that it certainly was regarded as incredible."‡ Schlegel manifestly speaks of the movement of the blood as taught by Harvey, because earlier writers had discussed the question of the circulation, as Harvey himself admits,§ but,

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* Among these we are pained to mention William Hunter, who, in his two introductory lectures to his last course of *Anatomical Lectures*, 1784, pp. 43, *et seq.*, speaks of Harvey in a manner that is a blot upon the lecturer's name, and shows that he had not investigated the question by a reference to the original works of the men whom he compares with Harvey.

† Pauli Marquarti Slegelii, M.D. Hamburg, *De Sanguinis Motu Commentatio.* Hamburgi, 1650, p. 7. Schlegel (Latinised, Slegelius), the son of a merchant, was born at Hamburg in 1605, and studied medicine at Altorf, Wittenberg, and Jena. In 1631, in company with Rolfink, he undertook a long scientific tour. He visited Holland and England, then went to Paris, where he remained two years ; subsequently spent several years in Italy ; and, after taking a degree at Padua in 1636, returned to Germany in 1638. He was at once appointed Professor of Anatomy, Surgery, and Botany at Jena. In 1642, Schlegel was invited to accept the office of "subphysicus," or assistant officer of health, in Hamburg, where he founded an anatomical theatre. He died in 1653. For further details, see *Mittheilungen aus der älteren Medicinal Geschichte Hamburg's*, von Physicus Dr. Gernet, Hamburg, 1869 ; and also *Lexicon der Hamburgischen Schriftsteller bis zur Gegenwart*, von Dr. H. Schroeder, now publishing. In the last, a list of twenty-four works by Schlegel is given, which illustrates both the variety and the depth of his studies.

‡ The original Latin is : Quin imo doctrinam illo tempore de motu sanguinis apud omnes fere incompertam aut certe pro incredibile habitam fuisse, neque obtineri potuisse rationibus ab iis ut assentirentur.

§ Sydenham Society's edition of *Harvey's Works*, p. 33.

"like persons purblind or groping about in the dark," had failed to recognise the intimate connexion and beautiful harmony of the different parts involved in the process.

The entire tenor of Harvey's life and work forbids the view that he was a plagiarist, and that, as Cesalpino's panegyrist has recently asserted, he arrogated to himself a discovery which belongs to the latter. Contemporary writers failed to recognise in Harvey's doctrine a reproduction of the teachings of Cesalpino; and, though his great adversary, Riolan, was satisfied that Harvey had been anticipated by Aristotle and Cesalpino, we can scarcely doubt that Schlegel correctly describes the state of medical science and the effect produced by the great work published in 1628. He says of Harvey's doctrine :* "Inaudita, communibusque et per multa sæcula inveteratis opinionibus adversissima sententia, omnes commovit."

But let us do justice to Cesalpino; for, though it is clear to my mind that he failed to appreciate the truth as it was made plain by Harvey, he approached nearer to him than any of the physiologists of earlier days. Any one who was satisfied with the evidence afforded by solitary passages in his writings might fairly assert that Cesalpino had taught the true doctrine of the circulation; but,

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* *De Motu Sanguinis Commentatio*, p. 1. Hamburgi, 1650.

when we search further, and find that he still regards the flow of the blood comparable to the flood and ebb tides of the Euripus ; that the arteries, according to him, convey the spirit to which their pulse is due ; and that he utterly failed to recognise in the heart the central moving power of the circulation,—we cannot but arrive at the conclusion that his doctrine, by itself, would never have formed the basis of modern physiology.

Cesalpino, whose work was published at Venice in 1593,* in the fifth book of his *Peripatetic Questions*,† describes the circulation in the following words :—"As rivulets draw water from a spring, the veins and arteries take their origin from the heart. It is further necessary that they should all be continuous with the heart, that the blood contained in them may be preserved by its heat, for it congeals under the influence of cold, as appears whenever it is removed from the veins. Dissection shows that all veins are continuous with the heart alone, for those which pass from the heart to the lungs are continuous with no other viscus ; they terminate in the ventricles of the heart and pass no further. The vena cava and the aorta, having reached the other viscera with the exception of the heart, pass beyond them ;

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* Andreæ Cæsalpini, Aretini, *Quæstionum peripateticarum*, libri v. ; *Dæmonum Investigatio peripatetica ; Quæstionum Medicarum*, lib. ii. ; *De Medicaminum Facultatibus*, libri ii. Venetiis, 1593.

† *Ibid.*, p. 116.

or, if they come to an end, they do not pour their blood into a general receptacle (*non in ventrum aliquem transfundunt sanguinem*), but are broken up into hair-tubes (*capillamenta*), for nowhere excepting in the heart is the blood contained in a receptacle out of the veins."

Although in this passage Cesalpino speaks of a continuity of the bloodvessels, he still adheres, as shown in another passage,* to the view that the venous system depends less upon the heart than upon the liver, which organ possesses a special nutritive power (*vim altricem*), and is the real source of the veins : " non igitur cor sed hepar est principium venarum." Again, elsewhere† Cæsalpinus gives his adhesion to the ancient fallacy that the blood passes not only to the lungs from the right ventricle, but also through the septum into the left side of the heart ; " partim per medium septum, partim per medios pulmones (sanguis) refrigerationis gratiâ ex dextro in sinistrum transmittitur."

Even Harvey himself, conclusive as are his proofs of a continuity of the current both in the lesser and greater circulation from the heart as a starting-point back again to the central organ, nowhere gets beyond the prevailing view of an anastomosis between the arteries and the veins.

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* *Quæstion. peripatet.*, lib. v. p. 117.
† *Ibid.*, p. 126.

It would be as reasonable to infer that Cesalpino had, without a microscope, anticipated the great discovery of the capillaries by Malpighi because he accidentally uses the term "capillamenta" to designate the minute divisions of the vena cava and the aorta, as it is to regard him as the true discoverer of the circulation of the blood. Everybody, as Cesalpino says, knew in his day that the arteries took their origin from the heart, in order that they might distribute the vital spirit throughout the body; and, again, he maintains that a continuous movement is propagated throughout the different parts of the body, because there is a continuous generation of spirit, which, by its increase (*amplificatione*), is fitted very rapidly to be diffused everywhere.

Cesalpino argues that the heart is manifestly the chief organ of sensation (*primum sensorium*), because it is associated with every sense of joy or sadness, which are first perceived to exist in the heart. The heart, therefore, is the origin of the nerves. And what, he asks, could such a struggle about the heart effect, unless there were a continuous passage from the heart to the instruments of movement, by which a large amount of spirit (*spiritus multus*) could be conveyed? There is not much in the foregoing passage that we can utilise; but in the following there is a mixture of truth and error which is more suggestive, although it

will not bear comparison with the clear and practical deductions, based upon observation in the dead and living body, which Harvey has laid before us in language as free from hypothetical jargon as anything known in science. In discussing the question of suffocation, Cesalpino* says: "It appears worthy of inquiry why veins swell on the distal side of a ligature, and not on the opposite side, which those know from experience who open a vein, for they apply the ligature above the point of section, and not below, because the veins swell below, and not above the ligature. But the opposite result ought to happen if the movement of the blood and spirit passed from the bowels to the body at large; for, if the passage be intercepted, no further progress is possible; therefore the swelling of the veins ought to have been above the ligature."

After inquiring into Aristotle's view on the subject, Cesalpino goes on to say: "The passages of the heart have been so prepared by Nature that the vena cava opens into the right ventricle of the heart, from which a passage opens into the lung; from the lung there is another passage into the left ventricle of the heart; from which, finally, an outlet opens into the aorta, certain membranes being placed at the mouths of the vessels to prevent a return; for there is a certain continuous

* *Loc. cit.*, p. 234.

movement from the vena cava through the heart and lungs into the aorta. But as, during wakefulness, the movement of native heat takes place outwards, namely, to the sensorial parts; but during sleep inwards, namely, to the heart,—it appears that during wakefulness much spirit and blood are carried to the arteries, for there is a passage from them to the nerves. But in sleep the same heat returns through the veins to the heart, and not through the arteries; for the natural entrance is through the vena cava into the heart, and not through the arteries. The proof of this is to be found in the pulses, which are large, powerful, quick, and frequent in those waking up, occurring with a certain vibration; during sleep, they are small, languid, slow, and scanty. For during sleep the native heat tends less into the arteries, but rushes more violently into them as the individual wakes up. The veins behave in a different manner, for during sleep they tumefy, but shrink in the waking state, as any one may see who looks at the veins of the hand. For during sleep the natural heat passes from the arteries to the veins by inosculations which are called anastomoses, and thence to the heart; but, as the tidal movement of the blood (*exundatio*) to the upper parts, and its ebb (*retrocessus*) to the lower parts, like Euripus, is manifest in sleeping and waking, so this kind of movement is not

obscure wherever a ligature is applied to a part of the body, or the veins are closed in some other way."

I trust I shall be pardoned if I do not go more fully into this question of priority, but refer those in whose mind any doubt may remain, to the original works of Cesalpino, where they will find much to interest them. Even the brief quotations that I have laid before you appear to justify to a certain extent the claims that have been raised for higher distinction among the physiologists of the past for Cesalpino than may have hitherto been awarded him, but at the same time I venture to think that they are conclusive as to the view that Cesalpino cannot be declared worthy to occupy the place so long and universally assigned to our illustrious countryman. Certainly Cesalpino himself was not conscious of having made an important, if any, discovery; for he introduces the subject of the circulation incidentally in a chapter headed "Cor non solum arteriarum sed et venarum et nervorum principium," and nowhere lays stress upon what is now claimed as his prerogative. Even among the list of subjects contained in his *Index eorum quæ notatu digna visa sunt* the circulation is not inserted. Lest, as Englishmen, we may be tempted to take a one-sided view of the question, permit me to adduce a few words from the work of one of the most

eminent modern French physiologists. Flourens,* who in his *Histoire de la Circulation du Sang*, gives evidence of a minute study of the authors who preceded Harvey, says: "Lorsque Harvey parut, tout, relativement à la circulation, avait été indiqué ou soupçonné, rien n'était établi. Rien n'était établi, et cela est si vrai que Fabrice d'Acquapendente, qui vient après Césalpin et qui découvre les valvules des veines, ne connait pas la circulation." And it may be added that he quite misinterpreted the functions of the valves.

A careful study of the entire subject appears fully to justify the opinion expressed by Dr. Willis,† that Cesalpino, tried by a moderately searching criticism, presents himself to us as but very little further advanced than the ancients in his ideas on the motion of the blood; and, again, that "The world saw nothing of the circulation of the blood in Servetus, Columbus, Cæsalpinus, or Shakespeare, until after William Harvey had taught and written."

We all know that Harvey did not evolve his doctrine out of his inner consciousness, but that by intense application and the study of vital

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* *Histoire de la Circulation du Sang*, par P. Flourens, Professeur au Muséum d'Histoire Naturelle de Paris, 1854, p. 28. An excellent summary of the history of the circulation is given in Mr. Lewes's *Physiology of Common Life* (vol. i. p. 259, 1859), in which the claims of Harvey and his predecessors are fairly and succinctly set forth.

† *The Life of Harvey;* introduction to Sydenham Society's edition of *Harvey's Works*, p. 63.

phenomena he arrived at the conclusions set forth in 1628, having undertaken a task which at the outset he regarded "as so full of difficulties that he was almost tempted to think with Fracastorius that the motion of the heart was only to be comprehended by God." It will be interesting to the Fellows of this College, no less than to the world of science at large, to know that we now have it in our power to estimate more accurately the gradual advances by which Harvey eventually arrived at his goal, inasmuch as the original notes of the first lectures which he delivered in this College in 1616 and in subsequent years, as Lumleian Lecturer on Anatomy and Physiology, have been recently rediscovered in the British Museum. Harvey tells us in the introductory letter to his "very dear friend Dr. Argent, the excellent and accomplished President of the College of Physicians, prefixed to his work *De Motu Sanguinis*, published in 1628, that he had for nine years and more confirmed his views by multiplied demonstrations." Hence the first date of the new doctrine is ordinarily fixed in 1619; but the manuscript lectures show that Harvey delivered his first lectures in 1616, and was then already on the threshold of the complete discovery. These lectures formed a part of the library of Sir Hans Sloane, which was purchased by Government in 1754, and, though entered in the Catalogue of

the Museum, they have disappeared for above a hundred years. A few months ago, in going over the duplicate books which had been set aside, this manuscript was found, probably in all the better preservation from having been so long buried. Allusion is made to these lectures by several writers. Dr. Rolleston, in his Harveian Oration (p. 70), gives all the details that he was able to collect regarding them, and recounts with what diligence they had been searched for. They were also evidently seen by the writer of Harvey's life prefixed to the edition of his works published by the College of Physicians in 1766, but have been mislaid since then. The notes are written in Latin, but the abbreviations and the handwriting are so quaint that no one but a gentleman in the habit of studying manuscripts of the period can decipher them.* Mr. Bond, the Chief of the Manuscript Department of the British Museum, has kindly produced a readable transcript of that portion of the lectures which commands our special attention. Possibly this College may

* In his own day, Harvey's writing was evidently a puzzle to his readers, for Dr. Ent, in his epistle dedicatory to the work on *Generation*, which he edited, says: "As our author writes a hand which no one without practice can easily read (a thing that is common among our men of letters), I have taken some pains to prevent the printer committing any very grave blunders through this." Many of my readers may already be familiar with Harvey's handwriting through the *fac-simile* of a letter of his, prefixed to Dr. Aveling's *Memorials of Harvey* (London, 1875), which fully confirms Dr. Ent's statement, as its authenticity is in its turn corroborated by the MS. lectures.

consider it a duty that it owes to itself no less than to the memory of the illustrious author to publish these notes, entire or in part, so as to complete as far as possible the history of the subject to which our attention is specially directed. Coupled with Schlegel's admirable *Commentatio de Motu Sanguinis*, which has received too little attention in this country, the two would form a not inappropriate memorial of the natal year of William Harvey, of which we celebrate the three hundredth anniversary in 1878.

Every detail concerning Harvey's early studies appears to command our interest; I, therefore, make no apology for presenting you with a few details concerning his first lectures. The volume, which is carefully bound in leather, with some pretensions to elegance, contains about 99 pages of foolscap paper, reduced to a size of 6 inches by 8. The binding was evidently an afterthought, and the loose pages may have been used for one or more years before they were put into their present form, because they bear the marks of having been folded lengthways twice over, so as then to occupy a very small space of about 8 inches by 2. There is also evidence that Harvey used the book in its present form for his lectures; for he had attached, by sealing-wax, threads of twine along the inner side of the cover, under which he could slip any further notes for

future lectures. The writing throughout appears to have suffered little or nothing in distinctness, except that of the title-page; but in evidence of the style and the difficulty of putting it into a modern form, I venture to send round an autotype copy of one of the most legible passages, which happens to be the *résumé* of what Harvey taught in his early lectures regarding the heart and circulation.

The title-page, which is in red ink, is very nearly illegible. It is to the following effect: "Prælectiones anatomiæ universalis, per me Guglielmum Harveium Londinensem, anatom. et chirurg. Professorem. Anno Dom. 1616. Anno ætatis 37. Prælect. April 1st, 1617." Underneath are the numbers 16, 17, 18, which probably imply that these particular notes were used for the lectures of 1616, 1617, and 1618.

The manuscript evidently consists of mere memoranda; jottings of the subject upon which the speaker could dilate as he chose. Each full page consists of about thirty lines, and but few of the words are written out in full. The abbreviations, which sometimes assume an almost hieroglyphic form, are very numerous; and as the terminations of the words are commonly mere up-and-down strokes, a considerable latitude must necessarily be allowed to the transcriber. Under these circumstances, and from the impossibility of inter-

preting or verifying some of the allusions and references, the transcript and translation of the portion that particularly concerns us, relating to the heart and circulation, inevitably leaves much to be desired.* I may say that this section occupies a little more than 15 pages of the volume, comprising altogether 441 lines.

The notes are put together in an aphoristic manner, and are occasionally interpolated with English words for which the writer, at the moment of composition, was unable at once to supply the corresponding Latin term. There are frequent references to other authors; Hippocrates, Galen, Columbus, Versallius (*sic*), Colsius, Aquapendens, and one, though this is doubtful, to Cæsalpinus. Every now and then we meet with initials W. H., appended, probably, for the purpose of distinguishing the passage as one that the speaker wished to mark as belonging especially to himself. The notes show that Harvey had, at that time, already studied the subject by vivisection, and that he had employed a variety of animals for his inquiry. But one feels throughout that he is still somewhat influenced by the prevailing views, and that he is only laboriously attaining that clear insight

* The attempt I have made in translating it has not yielded satisfactory results; and, after submitting it to more competent Latin scholars than I profess to be, I fear others would not be much more successful. It would probably be wisest to publish the notes in autotype, with an accompanying transcript, and allow each reader to be his own interpreter.

which his work, published in 1628, so plainly shows.

Harvey commences the section on the heart and circulation with an etymological assertion, for which, I fear, it would be difficult to find sufficient justification: "Cor a currendo, quia semper movetur." His first anatomical statement is to this effect:* "This (the heart) is the chiefest of all parts of the body, not by any inherent quality, for its flesh is more fibrous and harder and colder than the liver, but by the quantity of blood and spirits contained in the ventricles." You see, he still clung to the view that the heart contained something besides blood. The heart, he says, cannot bear any serious lesion without death ensuing; still, he adds, showing that he had already devoted attention to pathological anatomy, "vix ullis vitium cadaveribus vidi, nec consumitur ptysi (phthisi) secundum spem Galeni." An amusing instance of a jumble of Latin and English occurs in this section: "Exempto corde frogg scipp, eel crawle, dogg ambulat;" in which the English, not one word of which would pass muster

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* Principalissima omnium pars, non propria ratione, carne fibrosior enim et durior et frigi*dior* hepate, sed copia sanguinis et spirituum in ventri*culis*. Harvey enlarges upon this paragraph under three heads. 1. Unde fons totius caloris; 2. Unde auricula dextra pro aposte*mate* cernetur morte; 3. Unde piscis quasi lacuna san*guinis*, et eo major quo sanguis spirituosior, calidior; puto quo disten*tius* et non concre*tum* possibi*le* ad vitam, unde auriculæ pulsant post emo*tum* cor san*guinis* multitu*dine*. The italicised letters are the terminations suggested by Mr. Bond.

at a spelling-bee, is as interesting a feature as the physiological fact embodied in the section.

The next section is devoted to an examination of the structure of the heart and its contents. Harvey's initials are attached to such sentences as —"Hinc cur potius arteria oriri a corde quam vena, non video;" as—"Quære de principio venarum, puto a corde." He commences the consideration of the use of the heart with the statement—"Hæ duo lacunæ (the two ventricles) cysternæ sanguinis et spiritus;" the latter, he subsequently says—"in totum corpus hinc distribuitur." Much comparative anatomy is introduced; and we meet, probably for the first time in English medical literature, the designation of "bishop's miter" as applied to the left auriculo-ventricular valve. Harvey heads the next division of his subject "*Historia, Transitus Sanguinis et quomodo spiritus fiat.*" In this he discusses the question of the transmission of the blood through the foramen ovale, which he regards as a fœtal arrangement, describing at the same time the changes occurring in the ductus Botalli. The substance, colour, and temperature of the heart are considered; and here, as elsewhere, there are suggestions manifestly derived from clinical practice. Under the heading "*Motus*," Harvey dwells upon difficulties, which he subsequently surmounted, in understanding the movements of the

organ, and especially in determining which was systole and which diastole. He evidently took his audience into his counsel, and displayed before them the living heart, for he says† : " I have watched the process for entire hours, and was unable to determine the question for myself, either by sight or by touch ; therefore, I shall ask you to look for yourselves, and give me your opinion." However, he arrives at this conclusion, that, whether the erection of the heart is to be regarded as the act of systole or diastole, the heart, by its erection, projects the blood and causes the pulse.‡

One more extract, and I will detain you no longer with the notes ; hoping, however, that I have not taken up your time unprofitably with a subject that appears to me to justify our liveliest interest, and to merit a more complete and permanent record than my present opportunity permits.

The passage that I am about to quote forms the peroration to the first Lumleian Lectures on the heart, and comprises a summary of the doc-

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* Videtur quod arduum et difficile discernere aut visu aut tactu, dilatari et constringi, et qualis sit systole qualis diastole.

† Ego per integras horas animadvertendo non facile potui discernere neque visu neque tactu, quare vobis cernendum et indicandùm proponam.

‡ Erectione protendit sanguinem et facit pulsus, pro eresi (an heretical notion) et contra Galenum—"as in a glove," he adds in English, and concludes : Hinc pulsus arteriarum, non ex innata facultate sed protendente corde.

trines on the movement of the heart and the circulation as taught by Harvey at the beginning of his career. I shall give the passage verbatim, prefacing it only with the remark that it is initialled W. H.

"Constat per fabricam cordis, sanguinem per pulmones in aortam perpetuo transferri; as by 2 clacks of a water-bellow to rayse water.

"Constat per ligaturam transitus sanguinis ab arteriis ad venas.

"Unde Δ (demonstratur) perpetuum sanguinis motum fieri pulsu cordis.

"An (?) hoc gratia nutritionis, an magis conservationis sanguinis et membrorum per infusionem calidam, vicissimque sanguis calefaciens membra, frigifactus, a corde calefit."

Most of this is taught more explicitly in Harvey's work of 1628; but he then, as shown in his letter to Riolan, abandoned the theory that the heart was the source of heat.

I owe you, Sir, and Fellows of the College, an apology for having occupied so much of the brief time at my disposal by the inquiry into the merits of Cesalpino;* but it appears to me one of the

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* Cesalpino's inquiries into demonology have no bearing upon the subject matter of the oration; but I venture to direct the reader's attention to them, as they are often extremely amusing, and may assist in forming some opinion of the writer's character and frame of mind. As a whet to their appetites, I extract the following illustration from the *Dæmonum Investigatio* (chap ix. p. 154), of the views that prevailed even among the educated classes in the sixteenth

duties of the Harveian orator not to allow (as far as in him lies) an aspersion to rest on a name that has been justly called "immortal." Our departed friend Edmund Alexander Parkes, in fervent language, vindicated Harvey's claim to that title, in the posthumous oration which Sir William Jenner read from this chair last year.

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century as to the influence exerted by evil spirits upon man. Cesalpino relates that "A ship having put into Salamis, in the island of Cyprus, for the purpose of purchasing provisions, a young man left the vessel and bought some eggs of a certain woman. He ate them on the shore, and, after the lapse of an hour, lost his voice and became half stupefied. When he assayed to go on board, he was driven back by his associates, who did not recognise him, but regarded him as an ass. As the wretched man was unable to express himself in words, the ship quitted the harbour without him; and he, anxious and having nobody to advise him, returned to the woman by whose influence he suspected that he was detained. He obtained no help from her; and therefore, waiting his opportunity, remained three years in the country, occasionally carrying burdens according to the custom of asses. At night he stayed with the woman, but, continuing dumb, was unable to give evidence against the poisoner. However, having been accidentally led to the town, and passing a church, the ass was seen by certain Genoese merchants, at the elevation of the host, which happened at the moment to be raised, to bend his hind legs and to raise his forepaws in adoration. The merchants, seeing this miracle, inferred that the woman who was leading the ass was a witch (for this species of transformation was common in Asia). They brought the affair to the notice of the mayor of the town, who ordered the woman to be seized. She confessed her crime, and, in the hope of pardon, restored the young man to his former condition, and he returned home. She, however, suffered condign punishment." Cesalpino adopts this tale as a fact, and infers that such occurrences prove that the accounts given by poets of the metamorphoses of the companions of Ulysses into animals by Circe were not mere fables. It is not difficult to conceive how the sober mind of Harvey would treat these lucubrations of Cesalpino if he were acquainted with them; but they scarcely impress us with the conviction that the latter was a man capable of effecting a great revolution in science. It may be interesting to modern demonologists to know that a picture by Gius. Sabatelli—painted in the present century—is to be found in a chapel of Santa Croce in Florence, in which a mule is represented as kneeling before the host, which is being conveyed to a sick person (see *Museo di Pittura e Scultura*, Firenze, 1842. Tavola, 1182).

He spoke of Harvey's discovery as one "that is not only one of those cardinal discoveries which lie at the very foundation of physiology and medicine, but is one that from its very nature forms one of those great landmarks which must remain in the sight of all." Upon that topic it is unnecessary for me to dilate before an audience in whose ears the words of Parkes still ring. But it may not be unfitting to inquire whether we, the spiritual descendants of Harvey, are carrying on the great tradition which we have received from him in a manner that he would approve of—by a steady pursuit of truth for its own sake, by that rigid sobriety of judgment which everywhere characterised his researches, by that "marvellous industry" and "insatiable curiosity" with which he prosecuted his researches to the day of his death.

Our Hunters, our Marshall Halls, our Bells, our Brodies, all trod in Harvey's paths, and have largely aided in the onward movement of medical science in this country; but I think I do not indulge in a vain "Eidolon," if I look upon the present period of British medicine as one to which pre-eminently the term of the Harveian age of medicine may be justly applied. The future only can determine the meed of praise to be awarded to an individual, and will not fail to correct any exaggerated estimate which a contemporary may

form. But as it is one of the functions of the Harveian orator to speak "in commemoration of those who have added aught to the sum of medical science in the course of the bygone year," I believe myself to be only fulfilling the trust confided in me if I dwell upon the earnest work which we see on all sides, and which, in spite of malevolence and misconstruction, is leading us on step by step to more perfect knowledge, and enabling us more and more to benefit our fellow men.

Two of our distinguished contemporaries of this College I have already named—one, alas! no more—whose names will shed lustre upon the present time. But there are many, both in and out of this College, whom this country may be proud of, and whom we cannot but think that Harvey would gladly have extended the right hand of fellowship to, and have recognised as fellow-labourers. Scientific medicine of the present cannot fail to command the grateful acknowledgments of our descendants with such an array of names as Billing and Watson, Burrows, Williams, Carpenter, Sharpey, Beale, Paget, Bennett, Simon, Radcliffe, West, Sanderson, Johnson, Brown-Séquard, Lockhart Clarke, Murchison, Handfield Jones, Richardson, Garrod, Wilks, Pavy, Dickinson, Harley, Hughlings Jackson, Hutchinson, Bastian, Ferrier, and many others, whose researches have already secured them a

renown that nothing my feeble voice might urge can either abate or increase.

Would not Harvey have rejoiced to learn the revelations of the microscope and of the chemical laboratory, which belong especially to our day? Can we not picture to ourselves the flash of joy that would beam from his black eyes as he traced the intricacies of cardiac action and of respiration with the stethoscope, the sphygmograph, and the cardiograph? Would it not have gladdened his heart to see the admirable reports of the (late) Medical Officer of the Privy Council, spreading light over recondite processes, and illuminating subjects not less interesting to the man of science than fraught with benefits to the human race? Would Harvey not have followed with profound intelligence and animation the discussions in our societies on the causes and pathology of cancer, on the communicability and production of tubercle, and the intricate question of syphilitic infection?

Who can study the researches of Dr. Burdon Sanderson into the pathology of infective processes without feeling that he is leading us to a profounder study of the most hidden phenomena of disease than was thought attainable a very short time ago? Mr. Simon,* alluding to his work and that of his colleagues, says well that their studies are extremely important, and that ordinary pro-

* *Report of Medical Officer of Privy Council*, 1874.

fessional practice supplies neither opportunity nor immediate stimulus for them ; studies of elaborate and purely scientific research in aid of the development of medical knowledge, studies never immediately convertible to pecuniary profit, but perhaps, on the contrary, involving heavy cost ; studies, too, which, from their nature, cannot promise rapid results, nor be conducted in fragments of leisure, but require systematic and continuous labour extending over long periods of time.

Dr. Sanderson's researches have especially served to open out a new vista with regard to many inflammatory and febrile processes ; and, although they are not to be regarded as concluded, they have already shed much light, particularly on the origin and course of infective processes. We owe to his earlier experiments the discovery of the fact "that when in the lower animals local inflammations are produced, either in the skin or peritoneum, by the introduction of irritant substances, two distinct sets of consequences manifest themselves—viz., a chronic disease exhibiting in all respects the anatomical characters of tuberculosis, and consisting essentially in the overgrowth of certain tissues, designated as lymphatic or adenoid, and shown to be in close relation with the lymphatic system ; and (2) an acute disease presenting the leading features of pyæmia, attended

with the formation of metastatic abscesses, and, as a rule, terminating fatally and very rapidly by the formation of infective abscesses and nodules associated with inflammation, not only of the peritoneum, but of other serous cavities."

It is no small matter to have learnt from Dr. Sanderson's inquiries into the pathology of diphtheria, that microzymes and micrococci exist which possess the power of colonising in living tissues, and "thereby inducing a variety of inflammation which is distinguished from others by its tendency to result in disintegration, and that this faculty of disintegrative inflammation is possessed by them independently, and can be exercised without the concurrence of any previously existing morbid process." The micrococci found by Sanderson, by Keber, Cohn, and others in small-pox, the rod-like bodies, distinct from bacteria, belonging to splenic fever, the wavy spirilla discovered by Obermeier in the blood of persons suffering from relapsing fever, and not seen in other acute and infective diseases—all point to the necessity of remodelling many of our views regarding the essence of disease; while a more intimate knowledge of its pathology cannot fail to give greater precision to our methods of combating morbid processes.

We cannot hope to apply a more scientific treatment to disease than we do now, until we

thoroughly understand the origin and course of the disease, and the changes that occur. Although it is manifest that morbid poisons do not all act equally upon man and animals, still, it is also clear that we must be content to study the synthesis of disease, with very rare exceptions, in the brute creation only. Would that it were possible to popularise such researches as those initiated by the Medical Officer of the Privy Council, in order to convince a sentimental public that they open a prospect of hopeful harvest in the field of preventive and curative medicine. Surely, it is as much in accordance with the dictates of the most refined humanity to utilise animals for the extension of knowledge that shall afford relief or immunity from disease, as to employ them for the sustentation of life as food and raiment. As some of the agitators against scientific advancement are proof against facts and evidence brought forward in the vernacular tongue,* we may hope that they will more readily accept arguments when expressed in the language of Virgil. We would recommend them to read the "Carmen Elegiacum" of Dr. Bridges,† in which the poet offers an elegant protest against the imputation that heartlessness and

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* See especially the Report of the Royal Commission on the practice of subjecting animals to experiments for scientific purposes ; 1876 ; Bluebook.

† *Carmen Elegiacum* Roberti Bridges, de Nosocomio St. Bartolomæi, Londinensi. Londini ; 1877.

cruelty direct experiments made upon animals. After referring to the good work done by our distinguished fellow Dr. Brunton, whom he describes as

"Promptus aberrantes vivisecare canes,"

and, after alluding to the popular errors prevailing on the subject, he exclaims :

"Hoc crudele aliquid nobilitatis habet,
Hic simul humanis prodesse inventa videntur ;
Quoque loco cecidit rana, resurgit homo."

Assuming that we have acquired a power to recognise the germs giving rise to febrile and infective processes, or of the *causa proxima* (to use an antiquated term) of other morbid conditions, we could not hope to determine satisfactorily by chemical reagents in the test-tube the antidote that would neutralise them. This would merely be an ancillary method, guiding to further researches ; the real value of the antidote could not be established in any other way than by experiment upon a living body into which the germs had been introduced. Valuable as are the reports of Dr. Baxter,* as to the relative disinfecting power of chlorine, permanganate of potash, sulphurous acid, and heat, they deal only with contagia outside the body. We have probably all of us in practice hoped that, by introducing these and similar agents into the diseased body, we might

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* *Report of Medical Officer of Privy Council*, 1875 ; Appendix No. 6.

influence beneficially the processes manifestly depending upon such contagia. I fear that as yet no results have been achieved that would in any way justify a belief that the antidote has been discovered, which will neutralise or arrest an infective process in the body, as we have succeeded in doing external to it. Our treatment in these cases, as yet, consists in dealing with the product of the morbific germ, and in assisting Nature to bear its assaults with more or less impunity. The goal that we or our successors must aim at is to discover a germicide agent, whether to be introduced by the mouth or by injection directly into the blood ; so that, to use Mr. Simon's words,* "the bedside practitioner shall be able to apply his counteragents with the precision of one who conducts a mere physical experiment."

But if we are still far from a perfect knowledge of the intimate cause of morbid processes, promising as the investigations are to which allusion has just been made, we have greater reason to congratulate ourselves on our recent advances in the determination of the various phases exhibited during the progress of disease. Few appliances during the most recent period of medicine have contributed more to this advance than the thermometer, the universal adoption of which might well be adduced in evidence of that Harveian

* *Report of Medical Officer of Privy Council*, 1875, p. 1.

spirit which I venture to claim as a characteristic and prevailing feature in the medical profession of the present day. Remembering the early days of the stethoscope, and the comparative slowness with which it forced itself into universal recognition, the manner in which the thermometric test of morbid processes has been received in all ranks of the profession, from the time its value was first shown by Wunderlich and Traube, seems to justify a high estimate of the advance made by the students of medicine during the present generation. The thermometer does not give us the reason of the change of temperature in the individual case; but it enables us to form a correct estimate of many processes, the nature of which previously could only be determined in the post-mortem room; and increased diligence in its employment is likely to render more clear the diagnosis of various obscure changes, as, for instance, Bastian* and others have already indicated in the department of cerebral pathology. The thermometer tells us a fact, which the most educated tactile sensibility is inadequate to determine with precision; and both in the outset, course, and convalescence of acute disease, it is an invaluable help to judge of the requirements of our patients. Whether more care in observation, or more refined

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* *Paralysis from Brain-Disease in its Common Forms*, by H. Charlton Bastian, M.D., F.R.S. 1875.

instruments, will materially increase the value of thermometry, remains to be seen; but what we specially require is a means of determining the commencement of the incubative stage of febrile disease, so that we might be enabled to apply our remedies before the zymotic process has actually poisoned the entire system. The interval that elapses between the absorption of a germ and the actual manifestation of the complicated processes to which it gives rise is the period during which an antidotal or germicide agent would be most certain to effect the desired end. It suggests itself whether we are not likely to find, in a combination of the galvanometer and thermometer, the means of a further advance in this direction; and it seems to me that we must look to the galvanic test also for a solution of the problem, which is so often presented to the practitioner, how pain, which at present is only a subjective sign, can be rendered more objective; how we may estimate and measure this important symptom; how we can secure an instrument which, by anticipation, may be termed an odynometer.

The "tactus eruditus," upon which our predecessors justly laid stress, and which cannot now be dispensed with, is rendered more intelligible and receives a scientific basis in the explanations of the varying conditions of arterial tension afforded by the sphygmograph. It is one of those

inventions and applications of the modern physiologist which we conceive that Harvey would have especially delighted in, as giving confirmation to many views which he held, and explaining much that necessarily was beyond even his powers of solution. The sphygmograph affords us the *rationale* of those differences of the pulse which the practised physician has long recognised ; and though not suited, at least in its present form, for ordinary bedside practice, has already, in the hands of experienced observers, thrown much light on the changes which the heart and vessels are subjected to in the varying phases of disease. As it has already given precision to our physiological doctrines on the action of the heart, the condition of the arteries, and the balance of the circulation, we may hope that it will aid us still further in determining the action of many substances which affect the circulating apparatus and the blood, concerning which the medical mind is still in a painful state of dubiety.

In connexion with this subject, I am confident that I re-echo the feelings of every member of this ancient Corporation if I dwell upon the loss which the College has sustained, since the last Harveian oration was delivered, by the decease of a man whom we may justly designate as a genuine follower of our great medical prototype, and who showed by his work that he also "avowed himself

the partisan of truth alone," questioning Nature with all the perseverance of the earnest student, and not content with anything but the most rigid examination of the replies she vouchsafed to his inquiries. Among the numerous works of Harvey, the loss of which we have to deplore,* "by certain rapacious bands, which, not only with the permission but by the command of Parliament, stripped his house of all its furniture, but abstracted the fruits of many years of toil," we have to reckon a *Medical Anatomy*.† One of the various works by which our friend Dr. Sibson has established a name, which will endure while this College lasts, is a *Medical Anatomy*, in which he gives evidence of many of the admirable qualities which characterised Harvey. Like Harvey, too, he did not hurry into a publication of his researches, but thoroughly matured his work before bringing his fruit into the great market of literature. To both we may suitably apply the praise bestowed upon Goldsmith, in a somewhat different sense, in the well-known words: "*Nihil tetigit quod non ornavit.*"‡ Sibson's work in connexion with respiration, with the nomenclature of disease, with

* *The Works of Harvey*, Sydenham Society's edition, p. 481.

† *Ibid.*, p. 89.

‡ We hope to be pardoned for taking a slight liberty with Johnson's epitaph on Goldsmith, the commencement of which runs thus: "Olivarii Goldsmith, poetæ, physici, historici, qui nullum feri scribendi genus non tetigit, nullum quod tetigit non ornavit, sive risus essent movendi, sive lachrymæ, affectuum potens et lenis dominator, etc."

aneurism, and with sanitary science, deserves a grateful record on our part. There appears a special fitness in the fact that, the last time Sibson appeared before the medical public, he delivered two Harveian lectures "on Bright's Disease and its Treatment," in which we find all those qualities of the scientific physician which have left so deep an impression upon the generation in which he lived. They do not, of course, convey to the reader the many estimable qualities of head and heart, the warmth and heartiness of his friendship, the poetic love of nature and of art, which endeared him to all who had the privilege of intimate intercourse with him, and which we rarely see so harmoniously blended as they were in our departed friend. These, indeed, are enshrined in our affectionate memories; but his chief claim to be mentioned in this place, and on this occasion, lies in the fact that those who knew him best may claim for him, in an especial manner, that he was the representative of the Harveian spirit of honest and truthful research into the mysteries of God's work in Nature.

In no department of medical science has careful study offered to the inquirer of late years more promise of reward than in the domain of the nervous system. We have, indeed, been told, but recently in this hall, by one of its most successful cultivators, how much of uncertainty yet surrounds

our knowledge of disease of the brain; and yet, whether we dwell upon the physiology of the cerebro-spinal system, the chemical changes which it controls, the localisation of function, the relation of nutrition and nerve force, or the minute pathology of the brain and spinal cord, it is impossible not to be struck by the progress made by labourers of the present and most recent periods. In this field alone, of all the wide regions of medical science, we find no evidence that our Harvey instituted any special inquiries and observations. In his manuscript lectures on anatomy, the brain and spinal cord are treated in the most summary manner; and although his works afford proofs of his pathological knowledge,* of his acquirements and practice in surgery,† and of his acquaintance with and performance of operations in obstetrics,‡ we search in vain for a sign that he even appreciated the importance of the nervous system. The significance of this part of our

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* *The Works of Harvey*, Sydenham Society's edition, pp. 90—197, *et passim*.

† *Ibid.*, p. 254. Harvey here speaks of his surgical operations as a common thing; and it is particularly interesting to note that in an age when the "ferrum candens" was still in vogue for the arrest of hæmorrhage, he says: "I have occasionally, and against all expectation, completely cured enormous sarcoceles by the simple means of dividing or tying the little artery that supplied them, and so preventing all access of nourishment to the part affected."

‡ Harvey's essay on *Parturition* affords satisfactory evidence that he was not a mere theorist, but that he personally engaged in the practice of midwifery. He appears to have paid attention to the process of parturition of animals as well as of the human female (Sydenham Society's edition, pp. 521, *et seqq.*; see also p. 534).

fabric has, indeed, been scarcely recognised until the present century; and even now, great as have been the achievements of illustrious students, many of whom we claim as associates of this College, we only appear to see the dawn of the full effulgence of knowledge. Truly, whether we look to the results already secured, or to the promise they offer of greater light, we cannot refuse the claim of the labourers in this department of medical science to be considered as genuine fellow-labourers of Harvey; conscientiousness, perseverance, concentration and clearness of thought, are the characteristics of many of our contemporaries, whom, in an assembly like the present, it would be unnecessary to recal by name. But they, like the collaborators in other realms of medicine, have materially contributed towards rendering this present time deserving of the title of the Harveian era.

Few things are more encouraging to the medical man, who reads the works of Harvey with attention, than to find that his faith in the value of treatment was in no wise impaired by his studies;* on the contrary, he frequently illustrates the value of his physiological discoveries by showing the direct application to be made of them to the arrest and control of disease. The more we study the works that have survived him, the more

* See especially Sydenham Society's edition, p. 129.

intense becomes the admiration for the great mind that achieved them; and the greater our regret that barbarous hands destroyed other products of his labour, which we are justified in inferring to have been of the greatest value. As the reputation he enjoyed among his contemporaries has been confirmed by the continuous applause of his successors, we cannot doubt that his powers, brought to bear upon the investigation of disease and its treatment, the results of which were embodied in his (lost) "Medical Annotations," would also have largely advanced the healing art. With his help, it is not unlikely that our control of morbid processes might be greater than it is at present; and that we might already claim a greater precision in this department of our calling than our advances in diagnosis, in the chemistry of the body, and in the knowledge of drugs, can yet justify. Earnest as the work is that is being done in this field of science, it is scarcely commensurate with the results gained in other sections of the domain; though here, too, the Harveian spirit is abroad, and humanity is already reaping benefits which even Harvey could not have dreamt of.

But if we may not justly assert that we have as yet acquired the precision in our control over morbid processes that the general advance of medical knowledge would appear to demand, we

may claim for our knowledge of what is summed up under the modern term of State medicine a high position among the sciences that are directly conducive to the welfare of mankind.

In the application of medicine and the allied sciences to the prevention of disease, the present century may claim precedence of rank before any earlier periods in human civilisation. During the last forty years each decennium has been characterised by an ever-growing appreciation of the great truths of sanitary science. From the days of the Health of Towns' Reports by Edwin Chadwick to the later days of Parkes and Simon, medical men have continuously and unselfishly waged war against the vested interests of filth and zymosis. Nor have their efforts been futile, if increased salubrity and a higher average duration of life may be regarded as tests of success. Nowhere have these tests yielded more satisfactory results than in our naval and military forces; and seeing how much has been achieved, it does not appear out of place to express a hope that our Governments may always take the precautions that are necessary to insure to medical men, in their official capacities, such power and position that their representations may receive due support. I have already had occasion to dwell upon the Reports of the (late) Medical Officer of the Privy Council. The work of which he has been the

ruling spirit constitutes a memorial, which will remain an honour to himself and his colleagues, as it is to the time and people for which he laboured. It was with grief that the medical profession heard of Mr. Simon's resignation, and the pain was intensified by the report that his office was to be abolished. In the Supplementary Reports, which Mr. Simon has brought out since quitting his post, we are promised that some of the investigations, commenced under his supervision, shall be continued ; may we hope with the same zeal, earnestness, and success as before. It would be difficult to express adequately the sense the profession entertain of the value and significance of all that has been achieved by the Medical Department of the Privy Council ; but I am sure that we all endorse the sentiments that are so well conveyed in the following passage, which I take from Mr. Simon's last Report* :—"As for the general value and promise of that kind of work in its bearing on the progress of medicine, I entertain the strongest conviction that, in regard of all antagonism to disease, whether with preventive or curative measures, and whether by official or private hands, medicine's best prospects of increase and success are inseparable from such studies of exact science ; and that, in proportion as the

* *Reports of the Medical Officer of the Privy Council*, new series, No. viii. p. 7.

pathological insight becomes more clear, the growth of practical power will surely follow."

It would be tedious to dwell here upon details with which my audience is as well, or better, acquainted than I am; the more so, as the time is too short even remotely to do justice to the memory of past or to the labours of present workers. But it is well to bear in mind that, in this field also, we may quote Harvey as an authority for the due appreciation of those elements of health which it is the object of State medicine to foster and to secure, and which he feelingly dwells upon in his account of Parr, whose body he examined after death by command of His Majesty. Here, as elsewhere in his writings, Harvey indicates much that he doubtless enlarged upon more fully in those works which, unfortunately for medical science, were destroyed in the revolutionary war.

No one can say how much more rapidly medicine would have advanced, had not ruthless hands been laid upon those works of Harvey, of which only the titles have been brought down to us. But any one who has learnt to revere Harvey in what we possess of him, and has become familiar with his marvellous industry, his logical mind, and his powers of observation, cannot but feel that everything that he committed to paper was worth preserving, and was certain to impart knowledge of

great value to those not possessed of the same qualities.

In the brief remarks that I have ventured to offer to you, I have dwelt upon the modern manifestations of the Harveian spirit in scientific research. But Harvey has left us other features in his character worthy of imitation. Time does not serve to speak of more than the one that especially recommends itself to the Fellows and Members of this College, for it was the *liberality* of Harvey by which the resources of the College have so largely benefited. His munificence provided the former library and museum ; he endowed the College with his patrimonial estate of Burmarsh ; and left to it his "bookes, household stuffe, pictures, and apparell ;" his "best Persia long carpet ;" his "blue embroyedyed cushion, one pair of brass and irons, with fire-shovell and tongues of brasse, for the ornament of the meeting-room".* This example has not been left without imitators in the present Fellows of the College, who, in their self-denial and generosity, have of late years repeatedly shown themselves to be not unworthy recipients of Harvey's gifts. It affords me particular pleasure to announce publicly, for the first time, the special act of liberality of a recent distinguished Harveian

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* Quoted from Harvey's Will ; see Dr. Munk's *Roll of the Royal College of Physicians*, vol. i. p. 132.

orator, Dr. Arthur Farre, who, in his oration so eloquently and appropriately analysed Harvey's merits in connexion with the subject of generation. Dr. Farre has within a few days presented to the College, with his portrait, a most valuable library of ancient and modern works, which you may observe, conspicuous by their elegant binding, in the shelves above. It is the most important donation of the kind that our Corporation has received since that of the Marquis of Dorchester, a former Fellow, in 1680; and one that doubtless affords peculiar gratification to our distinguished Harveian librarian, Dr. Munk, in whose name, as in that of the well-wishers of this ancient body, I am sure I may challenge all associates to give or bequeath to it similar "pignora amoris", that each donor may deserve, in the vernacular, the record bestowed upon Harvey in the minutes of the extraordinary comitia of July 28th, 1666: "Fastis nostris honorificè semper commemorandus." The grateful thanks of the College are certainly due to Dr. Farre for his gift; and it affords me particular pleasure to take the opportunity of tendering him from this place our acknowledgments, and our heartfelt wishes for his health and happiness.

In bringing my address to a conclusion, I beg to offer to you, Mr. President, and the Assembly, many apologies for the very imperfect manner in

which I have dealt with the topics which I have ventured to touch upon. No one can be more sensible of my inadequacy to fulfil the task which you, Sir, with too indulgent trust, have imposed upon me. But though I crave your merciful consideration for my effort, I cannot but admit that I owe you, Sir, a debt of gratitude for having imposed upon me what has indeed been a labour of love—that of again poring over Harvey's works and studying those of his contemporaries. Every page that I have read has only served to convince me, more and more, of the magnitude of the obligations that this College and all generations of medical men who have lived, or will live, after Harvey, are under to him. Would that I could hope to have added the smallest tribute worthy of so great and good a man to the many offerings that his grateful successors have paid to his memory. But, while conscious of my own unworthiness to dilate on so great a theme, I have no fear that, for want of better advocacy, the power of the Harveian spirit will cease to prevail in English medicine, while so many illustrious workers as grace the present roll of the Royal College of Physicians are evidences of its continued influence.

Though I may not have proved what none but future physicians may fitly endorse, I cling to the belief that in no period of the past has this

College been so fully embued with a consciousness of its high calling, and a desire adequately to fulfil its important duties, as in the present ; and that the many labourers in the fields that Harvey cultivated justify a humble admirer of the many distinguished contemporaries, with which it is my honour to be acquainted, in designating the present age as especially deserving of the title of the Harveian era of medicine.

It is for the younger generation of the present, and for those who are to follow, to see that the Harveian spirit suffers no abatement. Let them walk in Harvey's footsteps, and they will certainly receive their reward, in the acquisition of profounder knowledge ; in the freer recognition of the value and aims of medical science by their fellow-men ; and, above all, by the assurance of greater power and control over the dark influences that still chequer life and hamper man's onward march to a more elevated and spiritual existence.

THE END.